MATTAPOISETT HARBOR

MATTAPOISETT
MASSACHUSETTS

SURVEY
(Review of Reports)

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS.

MAY 1973

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

IN REPLY REFER TO:
NEDED-R

22 May 1973

PUBLIC ANNOUNCEMENT CONCERNING THE COMPLETION OF THE NAVIGATION STUDY REPORT ON MATTAPOISETT HARBOR, MASSACHUSETTS

Notice is hereby given that the report on the navigation survey study of Mattapoisett Harbor in Mattapoisett, Massachusetts, authorized by a resolution of the Committee on Public Works of the United States House of Representatives, adopted 24 June 1965, has been completed by the Division Engineer. A public meeting was held by the Division Engineer at the beginning of the study on 12 May 1971 to ascertain the views and specific desires of local interests.

The study considered the request of local interests for providing safe navigational anchorage in Mattapoisett Harbor. Two methods for accomplishing the above objective were investigated: (a) a development in Eel Pond with entrance channel; and (b) a breakwater in the main harbor. The Eel Pond development would entail dredging about 22 acres of Eel Pond and an entrance channel stabilized by jetties and revetment. A small beach improvement could also result, as desired by some interests. The total cost for this project, which would include some marina facilities, access roads, bulkheading and parking areas, is estimated at 3 1/4 million dollars.

The plan to provide a breakwater in the main harbor had three choices of location and size. Two locations, one at Ned Point extending across 3,000 feet of the entrance and the other three tenths mile closer to shore, proved to be too costly to justify economically. The third breakwater, length 2,200 feet, would be located in somewhat shallower water and nearer to shore. It would provide for 50 acres of protected mooring area. The cost of this improvement plan is estimated at 3.2 million dollars, half of which would be paid

by local interests. In addition, the town would be required to provide an 800 boat marina for anchorage of the present and future fleet. This cost is estimated to be between $1.5 and $2.0 million.

When the amount of local participation in those plans which might be found justified became known, a conference was held with town and state officials to determine their attitude toward cost sharing. The town officials realized at that time that the amount of money that needed to be raised, namely between 3 to 5 million dollars, is more than the Town of Mattapoisett can contract for at this particular time. The reasons given included higher priorities of installing a town sewerage system and sanitary land fill which makes additional large expenditures of money by the town infeasible at this time. Therefore, the Division Engineer recommends no Federal improvement in the interest of navigation at Mattapoisett Harbor, be made at this time.

In accordance with law, the report is being referred for review to the Board of Engineers for Rivers and Harbors in Washington, D. C. Interested parties may present written views on the report to the Board. Statements submitted should not repeat material previously presented at public hearings held by the Division Engineer or contained in his report, as this information is already available to the Board. Information submitted should be new, specific in nature and bear directly on the findings in the report.

Written communications should be mailed to the Board of Engineers for Rivers and Harbors, Washington, D. C. 20315, in time to reach the Board by 22 June 1973. If extension of this date is considered necessary, written request stating reasons and additional time desired should be mailed to the Board soon after receipt of this notice.

Information furnished by mail is considered just as carefully by the Board and bears the same weight as that furnished at public hearings; therefore, hearings will be held only when found to be in the public interest. Requests for a hearing should be fully supported by reasons why the new material cannot be submitted just as effectively by mail as at a hearing.

Copies of information recieved by mail will not be furnished to other parties. However, such information will be regarded as public

information (unless the correspondent limits its effective value by requesting otherwise), and may be inspected and notations made therefrom by other interested parties, in the office of the Board.

The Board will not take final action on the report until after expiration of this notice, or any extension thereof that may be granted, and full consideration of all information submitted in response thereto. Should the Board contemplate action materially different from the recommendations of the Division Engineer, appropriate notice to that effect will be furnished to local interests directly concerned inviting their views and comments prior to final action.

Further information may be obtained from this office. Interested parties, including the press, may make such notes of the contents of the report as they desire. However, copies of the report will not be loaned for use outside of the office, but interested parties may purchase copies of the report, or parts thereof, including illustrations, at the cost of reproduction. Copies may be purchased from the Division Engineer, 424 Trapelo Road, Waltham, Massachusetts 02154, for $1.50 per copy. Checks or money orders should be made payable to "Treasurer of the United States".

You are requested to give the foregoing information to any persons known by you to be interested in the report, and who not being known by the Division Engineer, did not receive a copy of this public notice.

JOHN H. MASON
Colonel, Corps of Engineers
Division Engineer

Incl.
Map

CORPS OF ENGINEERS

U. S. ARMY

EXISTING PROJECT
RECOMMENDED
FOR ABANDONMENT
CHANNEL - 8 FT. DEEP, 100 FT WIDE
ANCHORAGE - 1.3 ACRES, 6 FT. DEEP

CONSIDERED IMPROVEMENTS
NOT RECOMMENDED
3000 FT. - BREAKWATER
2600 FT. - BREAKWATER
2200 FT. - BREAKWATER

CONSIDERED IMPROVEMENT
NOT RECOMMENDED
CHANNEL - 8 FT. DEEP, 200 FT. WIDE
ANCHORAGE - 22 ACRES, 6 FT. DEEP
2 - STONE JETTIES
MARINA FACILITIES
BEACH IMPROVEMENTS

Mattapoisett

MATTAPOISETT HARBOR

Eel Pond

Ned Pt

Barstow Rock

Snow Rock

Sunken Ledge

ROUTE 6

MAIN ST.

R.R. EMBANKMENT

22 ACRE ANCHORAGE

BOODSPEED ISLAND

GROIN

BEACH AREA

JETTY

8 FT. CHANNEL

FORMER PENN. CENTRAL R.R. EMBANKMENT

EXISTING TOWN OWNED TERMINAL FACILITIES

6-FOOT DEPTH CONTOUR

8-FOOT CONTOUR

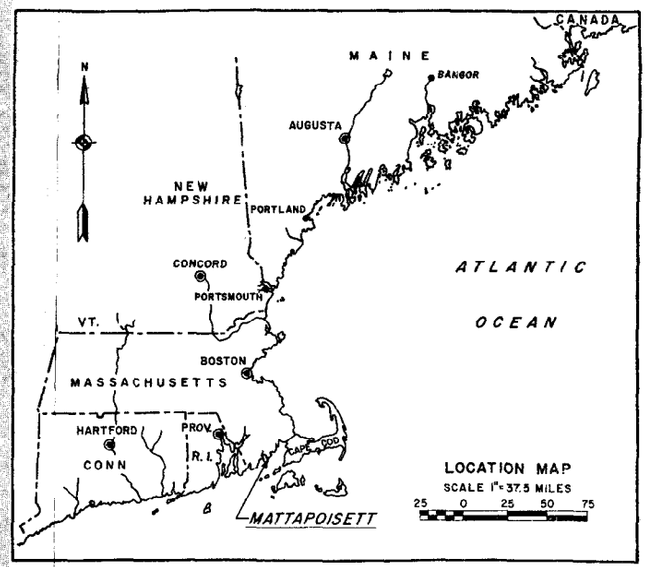
12-FOOT DEPTH CONTOUR

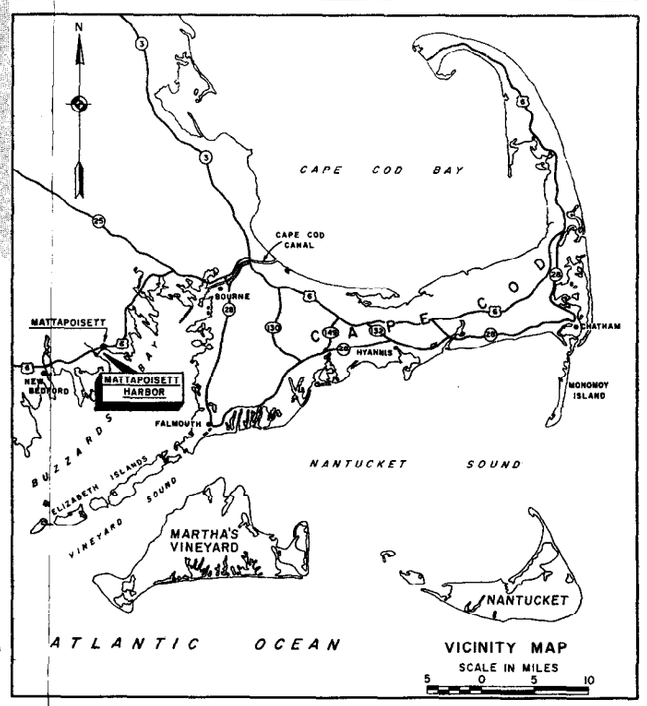
18-FOOT DEPTH CONTOUR

2200-FT. BREAKWATER

2800-FT. BREAKWATER

3000-FT. BREAKWATER





REVISION	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
WALTHAM, MASS.

DR. BY | TR. BY | CK. BY

SUBMITTED: R.J. BOND
PROJECT STUDY MANAGER

APPROVAL RECOMMENDED: CHIEF, PLANNING BRANCH

APPROVED: CHIEF, ENGINEERING DIVISION

MATTAPOISETT HARBOR

MATTAPOISETT MASSACHUSETTS

DATE MAY 1973

SCALE 1:6000

TO ACCOMPANY REPORT
DATED 18 MAY 1973

DRAWING NUMBER
B.D.-204

SHEET

PLATE - I

Mrs. Leslie

NEDED-R 18 May 1973

SUBJECT: Survey (Review of Reports) on Mattapoisett Harbor, Massachusetts

Resident Member
Board of Engineers for Rivers and Harbors

1. The subject report was made in response to a resolution of the Committee on Public Works of the United States House of Representatives, adopted 10 July 1968. The report is unfavorable to undertaking any navigation improvements at Mattapoisett Harbor, at this time.

2. In accordance with EM 1120-2-101, paragraph 1-126, there are inclosed:

a. Copies 1 through 16 of the subject report (copy No. 1 signed);

b. Two copies of the letter of transmittal to the Chief of Engineers;

c. Five copies of the public notice of completion of the report, and three copies of the list of names to whom the notice will be sent;

d. Sixteen extra copies of the reduced-size report drawings;

e. Three copies of the reduced-size display map;

f. Two full size prints of the report drawings;

g. One copy of the transcript of the public meeting, including a notice and mailing list concerning that meeting, which was held in Mattapoisett on 12 May 1971.

Mr. Boyd/hmc/548

NEDED-P 18 May 1973

SUBJECT: Survey (Review of Reports) on Mattapoisett Harbor, Mass.

3. Advance copies of the public notice of the report will be sent to Congressmen on 21 May 1973. Public release of the notice is scheduled for 22 May 1973.

JOHN H. MASON
Colonel, Corps of Engineers
Division Engineer

7 Incls.
as

cc:
Mrs. Quill
Mr. Leslie
Mr. Ignazio
Mr. Arpin
Reading File
Engr Div File

SYLLABUS

The Division Engineer has studied the requests made by local interests for improvement of navigation conditions in the harbor at Mattapoisett, Massachusetts. He finds that the area has potential for further development but that full use of the waterway is hindered by a lack of safe anchorage area. Consideration was given to two plans of improvement - one involving dredging anchorage in Eel Pond, including a stabilized inlet; and a breakwater in the main harbor. Local interests were informed of the magnitude of the costs that would have to be borne by them, including 50 percent of the first cost of the Federal improvement, the entire cost of future maintenance, and the entire cost of required shore facilities. The Town officials stated that the town would not be able to participate financially in any navigation improvement project that might be found justified. Therefore, the Division Engineer recommends that no Federal improvement in the interest of navigation at Mattapoisett Harbor be made at this time.

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DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

IN REPLY REFER TO:
NEDED-R

18 May 1973

SUBJECT: Survey (Review of Reports) on Mattapoisett Harbor, Massachusetts.

HQDA (DAEN-CWP-E)
WASH DC 20314

AUTHORITY

1. This report is submitted in compliance with a resolution adopted 10 July 1968 by the Committee on Public Works of the House of Representatives, United States. The resolution reads as follows:

> "Resolved by the Committee on Public Works of the House of Representatives, United States, that the Board of Engineers for Rivers and Harbors is hereby requested to review the reports of the Chief of Engineers on Mattapoisett Harbor, Massachusetts, printed in House Document Number 664, 80th Congress, 2nd Session, and other pertinent reports with a view to determining whether any modification of the existing project at Mattapoisett Harbor is advisable at the present time."

The Chief of Engineers assigned preparation of the report to the New England Division Engineer by letter dated 19 August 1968.

PURPOSE AND EXTENT OF STUDY

2. This study was made for the purpose of determining the need and justification for providing navigation improvements for the recreational boating fleets in Mattapoisett Harbor. A public meeting was held on 12 May 1971 at Mattapoisett to obtain information concerning the specific needs and desires of local interests, and to permit everyone an opportunity to present his views. A summary of the

information obtained is provided under "IMPROVEMENTS DESIRED." Federal, state, and local governmental agencies having an interest in the Mattapoisett Harbor area, were consulted during the study. Their views are included in the text and in Appendix A. Two plans of improvement were considered and are discussed later in this report.

3. Available reports, maps, and hydrographic and topographic survey data were utilized. New hydrographic and topographic surveys were not undertaken, as preliminary cost figures for possible justified plans of improvement indicated a very substantial cash contribution by local interests would be required, and there was sufficient doubt concerning the ability and willingness of local interests to participate, to justify not doing the field work. Studies were made of the recreational and commercial fleets using the harbor and the environmental aspects were investigated.

DESCRIPTION

4. Mattapoisett Harbor is located on the westerly side of Buzzards Bay about 50 miles southeasterly of Boston, Massachusetts and 6 miles east of New Bedford Harbor, Massachusetts. The western end of the Cape Cod Canal lies 7 miles to the east. The long axis of the harbor is oriented in a general northwest-southeast direction with the open water exposure to the southeast. The harbor is about 1 1/2 miles wide and 2 1/2 miles long. Except for some ledges at the entrance which somewhat break the sea from the southeast, the major portion of the harbor has water depths in excess of 12 feet. A light on Ned Point marks the approach to the harbor. Boats anchor between Ned Point and the terminal and transfer facilities located along the Mattapoisett waterfront at the northwesterly end of the harbor. A small tidal lagoon, Eel Pond, lies immediately west of the shorefront facilities and is connected to the harbor by a short, narrow and shallow tidal inlet. The fetch distance to the southeast is 9 miles, which allows the generation of waves of substantial height by storms. These storm waves often create hazardous conditions for the vessels anchored in the inner harbor.

5. The mean range of tide is 3.9 feet, the spring range is 4.9 feet. Mattapoisett Harbor is shown on National Ocean Survey Chart No. 252; the U. S. Geological Survey, Marion, Mass., Quadrangle map; and the map accompanying this report.

TRIBUTARY AREA

6. The Town of Mattapoisett with a total permanent population of 4,802 in 1970, is tributary to Mattapoisett Harbor. Because Mattapoisett is a resort town catering to moderate income groups, the population swells to about 10,000 during the summer season. Boating is one of the main attractions. Wholesale and retail trade is the principal source of employment. Second in importance is construction. The town was once a leading shipbuilding center. Excellent access to the town is provided by State Highway No. 6, which runs east to Cape Cod, and west to New Bedford and Fall River, Massachusetts and Providence, Rhode Island. Interstate 195, which currently terminates at New Bedford in its ultimate extension from Providence to Cape Cod, will provide additional excellent highway access to Mattapoisett. There is a municipal airport at New Bedford, which provides nearby air service.

BRIDGES

7. At one time, the entrance to Eel Pond was crossed by a stone culvert with a horizontal clearance of 17 feet and was owned by the Penn Central Railroad Company and is now owned by the town. This culvert was later removed making the pond available, to a limited extent, to small craft.

PRIOR REPORTS

8. Mattapoisett Harbor has been the subject of one previous survey report, which was published in House Document No. 664, 80th Congress, 2nd Session and dated 22 August 1947. This report formed the basis for the existing Federal project (never constructed) described in the next section.

EXISTING CORPS OF ENGINEERS' PROJECT

9. The existing project was adopted on 17 May 1950 and provides for an entrance channel 8 feet deep and 100 feet wide into the entrance to Eel Pond, and a 6-foot deep maneuvering and anchorage basin therein, about 1.3 acres in area. Subsequent to authorization, local interests stated that they would not be able to comply with the items of local cooperation. They claimed that 1954-55 hurricanes caused severe damages to the shorefront and boats and changed project site conditions. As a result, the town could not share ($33,000-1946 price levels) as required in project construction. Therefore, the project is inactive.

OTHER IMPROVEMENTS

10. Sometime before World War II, a stone-filled woodpile bulkhead was constructed on the east side of the narrow entrance to Eel Pond in an effort to stabilize the channel. In 1945, the structure was reported to be in poor condition and now apparently no longer exists. No other improvements benefiting general navigation have been constructed in the harbor area. In addition, the town has periodically appropriated and expended funds, total amount unknown, on repair of its public landing pier and for a nearby bathing beach.

TERMINAL AND TRANSFER FACILITIES

11. There are two active boat building, repair, and storage facilities located on the north side and well back from the harbor shorefront. Water access by boats to both facilities is not available. The town owns and operates five wharves, all in good condition. These wharves are large pier-types and made up of solid fill and masonry bulkhead with an asphalt surface. There are several private wharves in the harbor. The Penn Central Railroad spur has been abandoned and the right-of-way now owned by the town.

IMPROVEMENTS DESIRED

12. At the pre-public meeting conference held in Mattapoisett on 8 March 1971, local interests indicated that the following improvements for navigation were desired, in lieu of the authorized project:

a. A stabilized entrance channel from Mattapoisett Harbor into Eel Pond and an anchorage within the pond for the recreational boat fleet.

b. A harbor breakwater of sufficient length and top elevation so as to provide protection to small craft anchoring on its lee side, and to shorefront facilities, from southeasterly wind generated waves.

A number of people expressed themselves as being in favor of the Eel Pond improvement and about a similar number voiced objections because of ecological damages. One individual stated that a main breakwater in the outer part of the harbor would still allow creation of damaging waves behind it because of its long distance offshore. Another spokesman felt that a breakwater would create harbor pollution problems because of reduced tidal circulation. One gentleman

wanted consideration given to a smaller breakwater closer into shore. Still another man asked that Eel Pond be dredged and the materials used to construct a needed beach at Goodspeed Island. All those attending the public meeting were assured by the hearing officer that all possible alternative plans of improvement would be studied. Emphasis was placed on the fact that any plan of improvement found justified, particularly involving a breakwater, would prove very costly of which up to one-half would have to be borne by non-Federal interests.

EXISTING AND PROSPECTIVE COMMERCE

13. Waterborne commerce statistics, as compiled annually by the Corps of Engineers, show no commercial landings at Mattapoisett Harbor for at least the past ten years. Town officials state that there is one fish handling company at the Mattapoisett town wharf. This company deals in lobster, scallops, swordfish, flounder and carp. It is claimed that two trawlers and 25 lobster boats use the harbor as a home port. The present capacity of the plant is said to be 350 tons per year. The U. S. Fish and Wildlife Service has investigated the possibility of additional fish catches as a result of improvement and indicate any increase would either be not possible or neglibible.

DIFFICULTIES ATTENDING NAVIGATION

14. There is more than adequate water area with sufficient depths for mooring the existing and reasonably prospective recreational boat fleets. The difficulty results from a lack of protection against storm waves from the southeasterly quadrant. There are no nearby coves or protected anchorages where the craft may go to moor until storm waves subside. Thus, small craft are lost and damaged during storms from the southeast. Also, shorefront facilities are damaged.

PLAN FORMULATION

15. A detailed analysis of all alternative plans of improvement is provided in Appendix A. The following paragraphs summarize that information.

Two major methods for providing safe and adequate mooring and/or berthing area for the existing and prospective recreational boat fleets were considered -- dredging out most of Eel Pond with development of a safe entrance channel; and a breakwater in the main harbor. Because of objections by various fish and wildlife and conservation

interests, only 22 acres of the 35 acres comprising Eel Pond were considered for development. A plan of improvement was developed, which would provide for dredging the 22 acres for mooring area, and an entrance channel stabilized by jetties and revetment, and a small beach improvement. The total cost for this project, which would include some marina facilities, is estimated at 3 1/4 million dollars.

16. While a detailed analysis of the benefits that would result from this dredging improvement project was not made, a rough analysis indicated the plan was possible of economic justification. The benefits would consist of increased recreational use of the existing fleet, attraction of a prospective additional fleet to the harbor, and recreational beach use benefits. The latter benefits would be created as a result of placing the suitable sands taken from the pond, on the shorefront.

17. However, there are a number of serious drawbacks to such a proposal. First, non-Federal interests would be required to pay one-half of the first cost for the channel, anchorage, and beach improvements, i.e. nearly 1.2 million dollars. Second, they would have to provide and maintain at their own expense, marina-type facilities to make the improvement usable, such as access roads, bulkheading, parking area, and gasoline and minor service facilities. Third, maintenance of the general navigation facilities would also be the full responsibility of local interests. Finally, the mooring basin, even with requiring a fore-and-aft mooring system, would fall far short of being able to accommodate the total estimated prospective fleet of 1,075 boats. Because of the major drawbacks, attention was turned toward providing a breakwater in the main harbor.

18. A breakwater about 3,000 feet long with an elevation of 9 feet above mean low water, a 10-foot top width, and side slopes of 1.5 on 1 was considered for the vicinity of Ned Point where the average water depth is 17 feet. This location is essentially that desired by local interests. The cost for this work is estimated at 5 3/4 million dollars. Because of this high cost, the benefits fall far short of being able to offset the attendant annual charges. Even if the breakwater could be economically justified, it would not be recommended because of the long distance between it and the shorefront - over a mile - which would allow for the generation of waves hazardous to mariners and small craft. Thus, the only protected area would be in the immediate lee of the breakwater.

19. A second breakwater location, 0.3 mile closer to shore was considered, and while it would provide area sufficient to protect nearly all of the prospective boat fleet (using a bow mooring free-swing method), the cost was found to be still too high to enable justification - nearly 4.5 million dollars.

20. Finally, a breakwater with similar cross-sectional dimensions as the above, but with a length of 2,200 feet and located in somewhat shallower water near shore, was studied. It would provide for 50 acres of protected mooring area; however, this would not be adequate area for the prospective fleet. As a result, it would be necessary to require both a bow mooring system for approximately 225 boats (30 acres at 7.5 boats per acre) and a marina for 800 boats (20 acres at 40 boats per acre). The cost for this improvement plan is estimated at almost 3.2 million dollars for the breakwater, of which local interests would be required to contribute 1.6 million dollars. In addition, the entire cost of the marina, estimated to be between $1.5 million and $2.0 million would have to be borne by non-Federal interests.

21. Again, detailed analyses to determine specific benefits were not conducted. However, approximation for the 2,200 foot breakwater indicated the possibility of justification. With this in mind, a meeting with town and state officials was held to discuss the foregoing findings.

COORDINATION WITH OTHER AGENCIES

22. The U. S. Fish and Wildlife Service was consulted concerning the alternative plans of improvement being considered, particularly for the Eel Pond area. A report from U. S. Fish and Wildlife was not made because it was determined that the plans of improvement considered were either not economically justified or not acceptable by local interests. Similarly, the U. S. Coast Guard and the Environmental Protection Agency were not consulted as a specific plan of improvement was never developed.

DISCUSSION

23. The plans of improvement outlined above, were discussed with town and state officials at a meeting held at Mattapoisett on 20 September 1972. All the plans were discussed in detail, particularly those possible of justification. However, it became apparent

that local interests are not in a position to participate in such costly improvements at this time.

CONCLUSIONS AND RECOMMENDATION

24. By letter dated 27 October 1972, the Town of Mattapoisett stated that it would not be able to participate financially in any navigation improvement project that might be found justified. Therefore, the Division Engineer recommends that no Federal improvement in the interest of navigation at Mattapoisett Harbor, be made at this time.

25. In addition, reference is made to the existing inactive project (see paragraphs 8 and 9) adopted 17 May 1950. The project was never constructed because local interests have been unable to participate financially. As a result, the project was declared inactive on 17 July 1958. Based on boating and related facility needs, the inactive project can in no way satisfy the harbor's present navigation requirements at this time. Therefore, the Division Engineer recommends abandonment of the existing inactive project at Mattapoisett Harbor.

JOHN H. MASON
Colonel, Corps of Engineers
Division Engineer

3 Incls.
1. Map
2. Appendix A
3. Appendix B

CORPS OF ENGINEERS

U. S. ARMY

EXISTING PROJECT
RECOMMENDED
FOR ABANDONMENT
CHANNEL - 8 FT. DEEP, 100 FT WIDE
ANCHORAGE - 1.3 ACRES, 6 FT. DEEP

CONSIDERED IMPROVEMENTS
NOT RECOMMENDED
3000 FT. - BREAKWATER
2800 FT. - BREAKWATER
2200 FT. - BREAKWATER

CONSIDERED IMPROVEMENT
NOT RECOMMENDED
CHANNEL - 8 FT. DEEP, 200 FT. WIDE
ANCHORAGE - 22 ACRES, 6 FT. DEEP
2 - STONE JETTIES
MARINA FACILITIES
BEACH IMPROVEMENTS

Mattapoisett

MATTAPOISETT HARBOR

ROUTE 6

MAIN ST.

R.R. EMBANKMENT

Eel Pond

22 ACRE ANCHORAGE

GOODSPEED ISLAND

GROIN

BEACH AREA

JETTY

18 FT. CHANNEL

8-FOOT CONTOUR

6-FOOT DEPTH CONTOUR

EXISTING TOWN OWNED TERMINAL FACILITIES

12-FOOT DEPTH CONTOUR

2200-FT. BREAKWATER

2800-FT. BREAKWATER

3000-FT. BREAKWATER

18-FOOT DEPTH CONTOUR

19 DEPTH CONTOUR

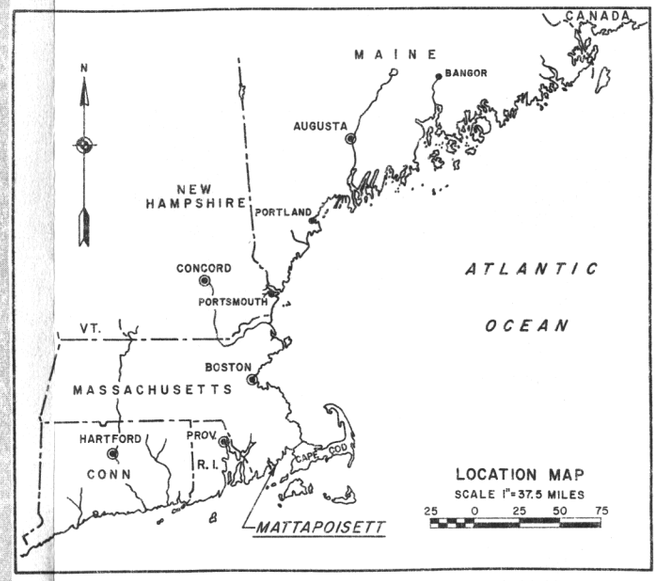
FORMER PENN. CENTRAL R.R. EMBANKMENT

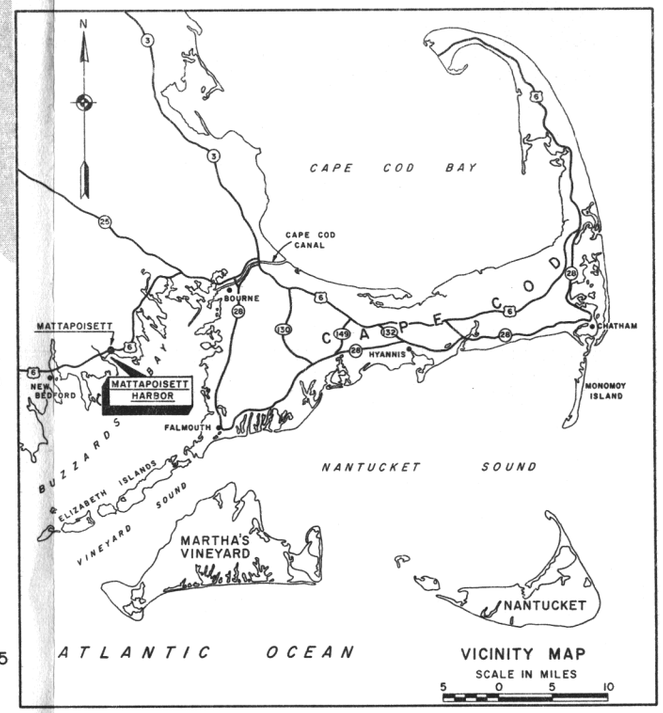
Ned Pt

Barstow Rock

Snow Rock

Sunken Ledge





REVISION	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
WALTHAM, MASS.

DR. BY | TR. BY | CK. BY

SUBMITTED: R.J. Bond
PROJECT STUDY MANAGER

APPROVAL RECOMMENDED:
CHIEF, PLANNING BRANCH

APPROVED
CHIEF, ENGINEERING DIVISION

MATTAPOISETT HARBOR

MATTAPOISETT MASSACHUSETTS

DATE MAY 1973

TO ACCOMPANY REPORT
DATED 18 MAY 1973

SCALE 1:6000

DRAWING NUMBER
B.D. - 204

SHEET

PLATE - I

APPENDIX A

PLAN FORMULATION

The major navigation difficulty at Mattapoisett Harbor stems from a lack of protected anchorage for the recreational boat fleet. Therefore, this study has considered alternative methods of providing the needed protection. The two major methods lending themselves to detailed consideration are: (1) provide safe and adequate access into Eel Pond and construct anchorage and marina facilities in the pond (the abandoned railroad embankment provides protection to the pond against wave action); and construct beach improvement on the shore side of railroad embankment; or, (2) construct a breakwater in the main harbor.

In order to provide for present and future small boat needs, it is necessary to have some idea of the size of the existing and prospective recreational boat fleets. The existing fleet has been found to consist of 440 permanently based craft and 35 equivalent transient boats. Nationally, the rate of growth of the recreational boat fleet for inland lakes and coastal areas collectively, has been about 5 percent per year in the recent past. The rate of growth for southern New England coastal waters has exceeded the national average in many instances. However, in the last few years, saturation development, environmental constraints, and economic factors, have combined to reduce the boating growth rate for New England. An accurate estimate of the present rate of growth is not available or easily obtained. However, because of the limited and restrictive conditions that attend Mattapoisett Harbor, the rate of growth for this harbor is judged to be one-half the national average, i.e. 2.5%, and is used for design of navigation improvements.

A 2.5% average annual increase would result in a total additional fleet of about 600 boats at the end of the 50-year project life. Thus, a total of 1,075 boats would have to be accommodated by the end of the project life. With this in mind, consideration was first given to developing Eel Pond to provide for the boat fleet.

Eel Pond extends over an area of about 35 acres, a substantial portion of which is exposed at mean low water. Because of objections, generally, to developing the entire pond area, consideration was given to using the area usually covered by water, approximately 22 acres. A preliminary plan of improvement was developed which would provide for a stabilized entrance channel into the pond and anchorage and marina facilities in the pond. The channel would have to be 8 feet deep and 200 feet wide to satisfy tidal hydraulic conditions, within the improvement prism. Two jetties and stone revetment along the slopes of the cut through the railroad embankment would stabilize the 1000 foot long entrance channel.

Twenty-two acres of the pond, dredged to a 6-foot depth, and steel sheet pile bulkheading would be required along the embankment and other high cut areas to create parking areas and access roads. Some of the more suitable sand materials could be used to build a beach at Goodspeed Island as desired by local interests. The remaining materials would be carried to sea and dumped. A terminal groin would be required to retain the beach material.

Of the 22 acres of anchorage that would be provided, four acres would be needed for access channels and maneuvering. The remaining 18 acres would be for mooring boats. By using the fore-and-aft mooring method, which allows for the greatest number of boats per acre other than marina facilities, the number of boats that could be accommodated would be 18 x 30 boats per acre, or 540. An additional 60 boats could be provided for by putting slips along the bulkhead. Therefore, the existing fleet of 475 boats could be accommodated as well as an additional 125 new boats. This falls far short of being able to provide for the total prospective fleet of 1,075 boats.

The total cost for this plan of improvement is estimated at over 3 1/4 million dollars. Dredging the anchorage would cost $1,100,000; construction of the channel with stone work required - $1,000,000; construction of the beach with groin - $300,000; marina facilities - $900,000; and aids to navigation - $30,000. The total annual charges would amount to $166,000 and consist of approximately $140,000 for interest and amortization of the first cost, and $26,000 for maintenance of the various project components. The marina facilities would be a local cost and self-liquidating. Therefore, no charge for this item was included in the annual charges. A rough approximation of the expected

benefits indicated possible justification. These involve increased recreational boat use, increased beach use, reduced boat damages, and attraction of an additional future boat fleet.

While the Eel Pond plan appears to be economically justified based on preliminary estimates, there are severe drawbacks. First, the cost to non-Federal interests would be excessive. Of the total project cost of over $3,250,000, local interests would be required to pay one-half the costs for the channel, anchorage, and beach, and all of the cost for the marina facilities. Their total cost is nearly $2.2 million. The Federal share would be about $1.2 million, including aids to navigation. Second, the entire maintenance charges of about $26,000 each year would have to be borne by local interests. Third, the improvement would not be able to accommodate 475 boats of the prospective fleet of 1,075 boats. If the entire 22 acres were developed such as to provide marina facilities only, then the 1,075 boats could probably be accommodated, but the entire cost would be borne by local interests.

Therefore, attention was turned to the second method of providing protected anchorage, i.e. a breakwater. The plan that would accommodate the greatest number of boats using the open anchorage mooring method, would be a breakwater at the "throat" of Mattapoisett Harbor. The breakwater would extend southwesterly from Ned Point. It would be 3,000 feet long shore connected, and providing an 800 foot opening of adequate depth for boats on the harbor's southside. A breakwater further seaward of this point was not considered because of the rapidly increasing depth and width.

To design the breakwater, data on winds, storm waves, tides, and related data were collected. The greatest exposure to storm waves is to the south-southeast. The fetch is 9 miles. Sixty mile per hour winds acting over this fetch for at least one hour can create waves 8.5 feet high; 50 mph - 6.9 feet; 40 mph - 5.3 feet; 30 mph - 3.8 feet. However, the frequency of occurrence of the higher velocity winds from the SSE direction for one hour duration, is small. Therefore, the design wave was selected as 6 feet. The spring range of tide is 4.9 feet. Estimating a storm surge set-up of 2.0 feet, the elevation of the top of the breakwater should be 10 feet above mean low water, i.e. 4.9 + 2.0 + 3.0' (1/2 the wave height). However, recreational craft can safely moor with waves of 1 to 2 feet. Therefore, allowing for some overtopping, the breakwater top elevation was set at 9 feet above mean low water. A top width of 10 feet, side slopes of 1.5 on 1, and a length

of 3,000 feet, were also established as minimum design requirements. A settlement of one foot was considered for making quantity estimates. The average depth of water is 17 feet.

The total quantity of stone required is estimated at nearly 260,000 tons. Using an average unit price of $16.50 for the armor and core stone, the total construction cost would approximate 4 1/4 million dollars. With contingencies, engineering and design, and supervision and administration, the total project cost would be nearly 5 3/4 million dollars. Annual charges for interest, amortization and $65,000 for maintenance total $400,000.

An analysis of benefits that would result from the Ned Point breakwater was not made because, (1) the likelihood of non-Federal interests contributing one-half the cost of the breakwater (nearly $2.9 million) was too remote, (2) a wave several feet in height can be generated over the one mile fetch between the breakwater and the inner harbor shorefront and tidal circulation may be adversely effected, although detailed study would be needed to substantiate this. Therefore, alternate breakwater plans were investigated.

A breakwater about 2,800 feet long was considered for construction at a location nearly 0.3 mile closer to the inner harbor shorefront facilities. The total construction cost was found to be nearly $3.5 million (210,000 tons @ $16.50). The total project cost with contingencies, E & D, and S & A would be over $4.5 million. The attendant annual charges are nearly $325,000, including 53,000 for maintenance.

The total area of protection that the breakwater could provide would amount to 135 acres. Based on a 3.9 foot normal tide range and an average water depth of 15 feet, and a 22 foot average length of craft, 7.5 boats per acre could be moored using the free-swing, overlapping circle method of mooring. Thus, the total number of boats that could be accommodated would be 135 x 7.5, or 1,010. This would account for all but 65 of the existing and prospective fleet of 1,075. These 65 boats could easily and safely be berthed at individual facilities. An approximation of expected benefits showed this proposal to be not economically justified.

A shorter breakwater (2,200 feet long) closer to shore was investigated. The total cost is estimated at over $3.2 million and the annual charges at about $220,000, including $35,000 for

maintenance. The protected area would total 50 acres. Obviously, this area could not accommodate the existing fleet using the bow mooring, overlapping circle method. The fore-and-aft mooring system would accommodate the existing and future fleets. However, this system is usually utilized only in very well sheltered areas, as even relatively light winds and small waves acting on the full broadside of a boat can easily cause one of the two moorings to be pulled. This allows the craft to free swing into the other boats and cause damage. Therefore, a combination open anchorage - marina facility would be necessary to provide for the present and future fleets.

If 20 acres of the 50 acres were developed for marina facilities, about 800 boats (20 acres @ 40 boats/acre) could be provided for. The remaining 30 acres could accommodate (30 acres x 7.5 boats/acre) 225 boats using the bow mooring, overlapping circle method. Thus, nearly all of the total prospective fleet of 1,075 boats could be handled. Again, however, there are major drawbacks. The provision and cost of the marina facilities with required parking areas and access roads, gasoline, and water supplies, would be entirely the responsibility of non-Federal interests. It is estimated that the cost of a marina with necessary attendant facilities, could cost between $1.5 and $2.0 million. In addition to this expense, non-Federal interests would have to pay one-half the cost of the breakwater, i.e. $1.6 million. Further, operation and maintenance of these facilities would be the responsibility of non-Federal interests.

Because of the excessive local share involved in those plans of improvement found justified above, a conference was held with town and state officials to determine their attitude toward cost sharing. The results of the meeting are presented under the section titled "DISCUSSION."

APPENDIX B

TOWN OF MATTAPOISETT

MASSACHUSETTS 02739

OFFICE OF THE SELECTMEN

October 27, 1972

Mr. Raymond J. Boyd
Civil Engineer
Army Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Mr. Boyd:

The Board of Selectmen have discussed, in detail, the meeting which was held at the Town Hall on September 20 with several interested persons on the subject of the Harbor Survey which has been made by your department.

We feel that the amount of money that is going to be raised, namely between 3 to 5 million dollars, for a further study and implementation of this program is more than the Town of Mattapoisett can contract for at this particular time. We have so many vital problems coming up including putting in a sewerage system and a sanitary land fill that an additional large amount of money does not seem feasible at this time. We would, however, like to have this matter taken up at a later date when a study can again be made. We feel that this is very vital and we do not want to have the matter dropped completely.

We, at this time, want to thank you very much for the work which has been done by the Corps of Engineers and the interest which you particularly have shown in this matter.

Sincerely,

BOARD OF SELECTMEN

David N. Haley
Chairman

ECP/cjp